



# MAGAZINE

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FRONT COVER: *Coventry old Cathedral,*  
by K. J. Fleming (I.C.I.A.N.Z.)

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## The Way Ahead

By P. C. Allen

Two probable lines of advance in industry are here sketched by I.C.I.'s Fibres Director. First, the possibility of making greater use of models to shorten the development stage of new projects. Second, the blurring of the old lines of division between staff and payroll workers.

*This article is the last part of a talk given recently by Mr. P. C. Allen to the Institution of Works Managers on the occasion of their 25th anniversary, under the title "The New Industrial Community."*

CAN we by any means known or unknown, get anywhere in trying to cut down the period between invention and full-scale production? In the last fifteen years or so this has been a serious and forbidding problem in, for example, plastics and man-made fibres, and I would not pretend to know the answer. But somehow, perhaps by attacking bits at a time, we can whittle away the immense expenditure of time, money and man-power which a new invention—in certain fields, at any rate—demands before the inventor and the public can benefit from it.

If you take the case of the now universally known plastic polythene, it was first discovered on a minute scale during some experiments on extremely high pressures at the end of 1933. During the next six years something like a fortune was spent on devising a process for making this odd new product continuously and finding what it could be used for and how customers, if there were to be any, could themselves use it; so that it was not until the day war broke out that the first full-scale plant in the world, with a capacity of 100 tons a year, started up—and providential that was, because the first use for polythene was for insulation in radar equipment.

From then on the sailing became plainer, uses became diversified and multiplied, until today we are well on the way to a plant capacity in Britain of 100,000 tons a year.

Similarly, that great invention nylon demanded something like ten years of development in the United States

and the expenditure of 27 million dollars and the services of hundreds of trained minds before it came on to the market. With 'Terylene'—a British invention this time—the story is the same, only more so, the time of development being prolonged by the effects of the war and post-war shortages.

Whinfield and Dickson of the Calico Printers first made 'Terylene' in a test tube in Accrington in the spring of 1941. Then followed the same pattern: "What have we got here?" "Is it good?" "Yes." "Then how do we make it? Can we make it economically? What is it to be used for?" As a result of having to do this, and by dint of spending £2,000,000 on development, it was possible by late 1950 (nearer ten years than nine after the first invention) to put forward a plan to put up a full-scale plant, and only then, four years and £11,000,000 later, was the product coming out of the full-scale plant—nearly fourteen years after Whinfield first saw a strange new substance in a test tube.

Now perhaps this appallingly long process is at its worst in a wholly new form of matter like polythene or nylon or 'Terylene.' I think it is, and it is also true that if your new substance is a textile fibre the period of repeated test, adaptation, and test—all of which have to go through to finished articles—socks, curtains or fishing nets—is longer than with, say, just a new chemical of limited scope. But somehow we have got to try to cut down on time—for time is not on your side when you are up against Americans, who tend to

be quicker; on money, which is not unlimited in this country by any means; and on skilled man-power—which we most certainly have not got enough of.

*I do not know that we are conspicuously worse than other countries in our rate of development, but it would be a wonderful thing if we could show ourselves as bold and inventive in developing a new thing or new idea as in having the idea itself.*

## The Role of Models

As I have said, I do not know the answer; there probably is not an answer: there may well be several answers which together would make a big contribution. The new industrial community has got to work hard on this task. There are places, however, where new techniques are becoming available which can help us, and one of these most certainly is the design stage. In designing a large plant thousands of calculations and thousands of drawings have to be made, and, as I told you, it took four years to design and put up the first full-size 'Terylene' plant. New computers and calculating machines can help a lot. Secondly, you can, we have found, save time, money and scarce draughtsmen's hours by the use of models. This latter technique I find of great interest.

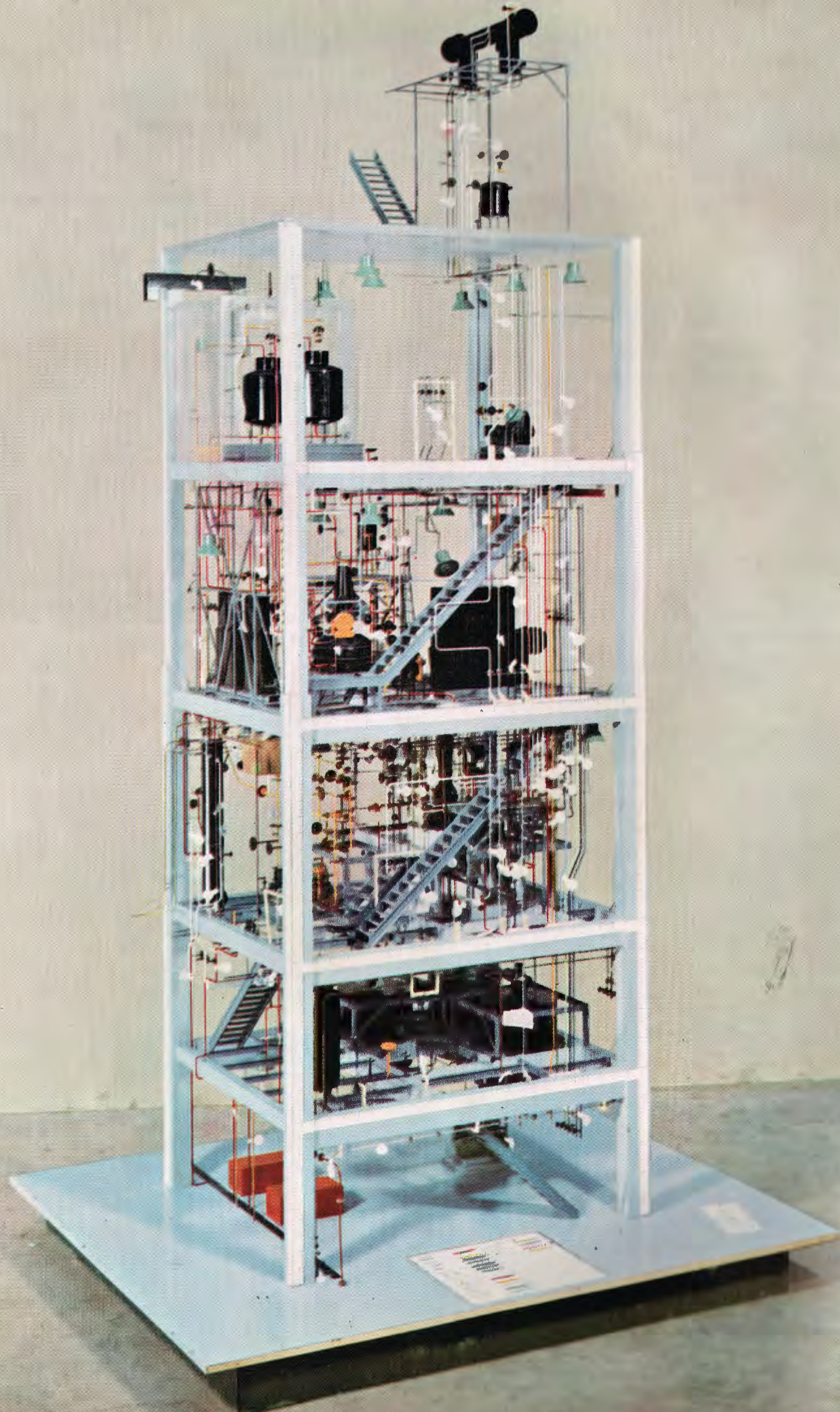
The methods we are now following involve the use of two distinct types of model, one of which may be termed the process design model—a three-dimensional sketch really—and the other the detailed design model; in the case of chemical plant, the latter may be called the pipe-work model.

## Saving Draughtsmen's Time

The process design model is produced from the flowsheet. Each item of process plant is represented by a simple wood or cardboard model—a piece of broomstick, even—but roughly to scale and indicative of the actual shape. A three-dimensional framework is provided with wood or steel vertical members at the corners supporting flat sheets to represent the floors, these being fixable at any height on the vertical members. Once the pieces are available it takes very little time to produce a workable three-dimensional arrangement of the plant. An approximate layout, as it were a rough draft, for a million-pound project might be done in a day.

A design team consisting of the chemists, engineers and method study experts sitting round the model can then very easily assess and modify the arrangement. Within a week or so it should be possible to arrive at





a layout which everyone is agreed about. Not only will many draughtsman-hours have been saved, but a result should have been reached within a very few weeks which might have taken the same number of months, and in addition the design should be a nearer approach to the best, as the non-engineers have played their part with a better understanding of everything involved.

### *The Pipework Model*

Next the detailed design of the items of equipment and of the building and structures goes on the drawing-board. You cannot avoid that. But then it is possible to construct an accurate model—say to a scale of  $\frac{3}{4}$  inch to the foot—which may again be examined and amended if necessary. This is the detailed design or pipework model. *Once the general arrangement is frozen, this model can be used to run all the pipework; to position the instruments, instrument runs and instrument panels; to position starters, switchgear and lighting fittings and to run electric cables; and to position valves, push-buttons and controls generally, including the addition of any access platforms which may be necessary. The whole can be studied throughout by the experts with an ease, certainty and speed which would not be possible with a mass of drawings, and corrections can be made as work proceeds.*

This type of modelling demands staff of the calibre of senior designer draughtsmen, and either they or assistants working for them must have the necessary dextrous craftsmanship. However, the man-hours required are much less and finality can be reached in a much shorter time than would usually be practicable by drawing-board methods.

### *A Big Saving*

This pipework model is then used for site erection. We are still experimenting with the extent to which site erection can be done directly from the model without any further drawing at all, but even so a fair amount of hand sketching is required on site, as tradesmen cannot on a large job be continually returning to look at the model; but these sketches can be scaled off the model and will involve much less work than proper engineering drawings. It is hoped that by the use of stereoscopic photographs we can reproduce the equivalent of "prints" of portions of the model and so cut out a good deal of sketching.

Apart from its use in design, a model is obviously a great help in giving construction people a real picture

of the complete job. Under the conventional system of piecemeal issue of drawings to the site it was by no means easy for all the construction supervisors to be working from the start with a clear idea of their commitments. Also the production staff will find models to be a great help in deciding on the manning of the plant, in the training of supervisors and workers before the start-up, and in the working out of methods and bonus systems.

So much for models. I do not suggest that they solve all our problems, or even the major part of one of them, but they do help.

Finally, I would like to touch on quite another problem which managers in the new industrial community must, I believe, give thought to.

*We are going to find with the increasing complexity of our factories and our new machines and apparatus that inevitably the lines between the work of staff and payroll, in the present accepted sense of these words, are going to become blurred.* As I have said, many new skills have developed and become part of our industrial life in the twenty-five years since this Institution was founded, and many more will so grow in the next. It is not clear in what categories some of these new experts should be placed if we merely stick to the old classifications.

### *More Staff, Less Payroll Workers*

Then, too, the ratio of payroll to staff as now defined is falling everywhere and will continue to fall; in I.C.I. it has come down from something like 7.5 before World War I and 3.5 before World War II to 2.4 now, so that, although the numbers of payroll workers has gone up—by 16% since 1946—the number of staff has risen much more—by 49%. This is a healthy tendency and is, of course, paralleled in British industry as a whole and in the U.S.A.

So we are, I hope, rapidly departing from the old worn-out ideas of bosses and hands, or masters and men, a handful of the former and masses of the latter—usually with antagonistic beliefs—and tending, I trust, towards a community where everybody from top to bottom works for the firm and where artificial distinctions between groups of employees have gone. If you look at it dispassionately I think you will agree that conditions of work—holidays, pensions, time-keeping, methods of payment and the like—often vary in the wrong direction, favouring perhaps a young girl in the typing pool just out of school rather than her father in the same concern who is a first-class

(Continued on page 141)

**A new phase in plant design:** a model (actual size 5 ft. 6 in. high) made as a guide to the design of Wilton's 'Butakon' plant. After the general plant layout had been agreed with the help of a preliminary model, positioning of pipework, cables, instruments and controls was finalised on the model shown.



CHANGING PATTERN OF ALKALI EXPORTS

By D. G. Emerson (Export Sales Director, Alkali Division)

The pattern of export sales from Alkali Division is always changing, but over the years one trend has been constant—the rising total of tonnage sold abroad.

ALKALI is one of the old sweats in the chemical export trade, possibly one of the oldest. To those who do not deal in it alkali is little more than a name, largely because it is a raw material which is of no direct use or interest to the general public apart from occasional doses of bicarbonate. The name, of Arabic origin, suggests the ancient lineage.

About 5000 years ago the Egyptians discovered, no doubt in the first place by accident, that if bodies were steeped in naturally occurring alkaline lakes, they were preserved. Excavations in Egypt have revealed an ancient glass works of the eighteenth dynasty, or 1580 B.C., and it is probable that glass was being made in Syria at this time, in both cases from natural sources of alkali.

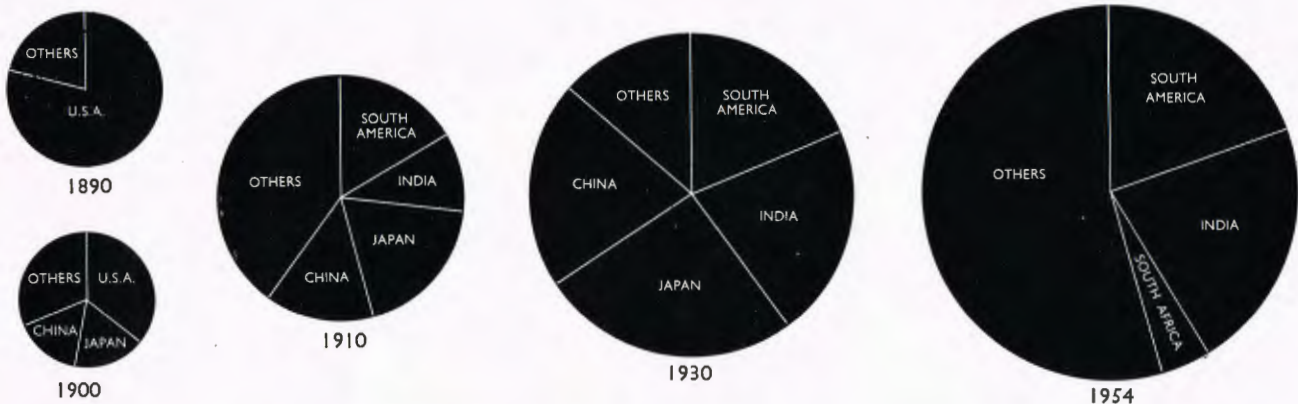
In industrial times there was a large production of alkali in the United Kingdom by the Leblanc process. In this article we are concerned with that fragment of the world's alkali history since the establishment of the ammonia-soda industry, first by Solvay at Couillet and later in 1874 by Brunner-Mond at Winnington.

From the beginning exports played an important part; in fact 60% of the first year's output at Winnington was sold abroad. It was not until 1896 that sales in the United Kingdom first exceeded exports.

The graphs reproduced here illustrate the main changes which have occurred in the pattern of alkali exports from the United Kingdom since 1890. It will be seen that initially a high proportion went to the United States, but by 1900 exports were divided roughly one-third to the States, one-third to the Far East, and one-third elsewhere. This fall in exports to the United States was the result of the establishment of



Brunner-Mond calendar of 1911 distributed in India. The washerwoman on the left, who uses Brunner-Mond alkali, has the whiter product and the cheerful smile.



Pattern of exports, 1890-1954. The area of these diagrams is proportional to the tonnage sold.

an alkali industry there in which Brunner-Mond themselves took an active part by the formation of the Solvay Process Company and the erection of the first ammonia-soda plant in the Western hemisphere at Syracuse in 1881.

The next ten years saw a spectacular growth in exports (the area of the diagrams is proportional to the total tonnage). America by this time had dropped out of the picture, but its place was taken by South America and India. This trend continued, and by 1930 large (and approximately equal) tonnages were going to four main markets, with half the total going to China and Japan.

By 1954 the pattern had changed again. China and Japan had become self-supporting. A new market, South Africa, had become of great significance, but what is most interesting as a guide to the future is the very great increase in exports to the relatively smaller markets.

Alkali trade has, not unnaturally, been affected by certain characteristics of the ammonia-soda process. The capital investment is very large; the raw material requirements are exacting; and the products are bulky in relation to their value. The first two factors have resulted in the establishment of a comparatively small number of large units of production. Bulkiness of the product has the obvious result that transport charges play an important part in the geographical pattern of trade.

The history of British alkali export trade has an obvious recurrent feature. As industrialisation in an overseas country gets under way, alkali consumption increases and a substantial export trade is built up. Depending on the availability of raw materials and other factors, the point may be reached when the consumption in the overseas country justifies the erection of an ammonia-soda plant. This leads to a gradual replacement of imports by locally produced products. The United States is an early example of this; more recently the same thing has happened in China and Japan.

It might be inferred that ultimately all important overseas markets will become self-supporting in alkali and that

our export trade will dwindle into insignificance. This is not likely to happen, however. Past experience shows that the loss of each large market has been more than compensated by growing demands in other parts of the world, and this process can certainly continue for many decades.

Brunner, Mond & Co. paid close attention to the Indian and Chinese markets in the early 1900s, and an interesting type of advertising was used: two examples are before me in my office. The first, a calendar for 1911, distributed by Brunner's in India, is perhaps the first "Persil" type advertisement, the washerwoman on the salesman's right who uses B.M. & Co. alkali being easily distinguished by the whiteness of her product. Her lapdog subtly suggests a life of ease. The second, more elaborate, picture portrays many of the uses to which alkali was put in China.

The uses shown in these advertisements predominate today. A high proportion of the sodium carbonate exported goes into the glass industry; sodium hydroxide is used in the production of soap, rayon, and paper; and in addition a new alkali-consuming industry has come into prominence—aluminium. Apart from these major uses and a host of minor conventional ones there are some of a rather bizarre nature.

For example, in Central and North China about one-third of the consumption of soda ash in the years before the war was used to make hard blocks by mixing the soda ash with water and with a small amount of bicarbonate and allowing the mixture to set. These blocks were used for cooking, small quantities being included in the ingredients for making buns and in cooking vegetables.

In the north of the Argentine there is a substantial and unusual use for bicarbonate of soda, tons of which are regularly sold through the village stores. The Indians in this inhospitable district, where living is a harsh struggle, take comfort from the coca leaf, which contains natural cocaine juices. These are best extracted in alkaline solution. The technique is to chew a wad of leaves with a pinch of bicarbonate.



# THE SANDWICH WAY UP

by W. H. Perkins (Educational Consultant to I.C.I.)

*We have all heard about the shortage of scientists. But perhaps we do not all know the ropes when it comes to advising a youngster of the opportunities open for taking up a scientific career*

FROM time to time our newspapers carry advertisements from United States firms seeking scientists and engineers. It would be pleasant to think that the advertisers believe they will get better men in Britain than in the United States. But the real reason, of course, is that the United States is short of scientists and engineers, and has no compunction about recruiting over here.

This does not mean that we produce more scientists and engineers than the Americans. All enquiries lead to the opposite conclusion, and British industry has for some years been very anxious about its own shortages. During the last year or so even more disturbing information has been emerging from Russia, where the number of applied scientists in training is said to be greater than that in the United States and Western Europe taken together.

These figures may perhaps be exaggerated; the reader of an English newspaper may indeed be forgiven if he thinks that all young Russians of both sexes are either soldiers, athletes and dancers or potential doctors, engineers and scientists. But there is no doubt that the British situation is serious and that new measures are needed to attract young people to technology and to provide them with suitable education, training and incentives.

Fundamental education and some of the basic training are the responsibility of schools and colleges, but industry must play its part too.

For those who show sufficient ability in mathematics and science at school the conventional way is to graduate at a university and then to take up work in industry. Sometimes, especially for engineers, it may be advisable to spend a year in industry before entering the university, and it is always a good thing to spend part of the university vacations in getting the feel of industrial conditions and problems.

There are, however, many young people who cannot take a university course. They may not have developed their interests early enough or may not be able to afford it. In any case the universities are unable to take in sufficient students to supply the national needs. So there is an obvious case for alternative courses.

The natural solution is to make it possible for those who enter employment on leaving school to acquire qualifications in science or in professional technology during their

early years of service. This has, of course, been possible for many years by part time study, but it has always been an arduous course, generally described as "the hard way." There has been heavy wastage and much lost effort. What is now happening is that the Ministry of Education, the Local Education Authorities and the employers are setting out to make the hard way easier and to give more encouragement and greater opportunity to those who choose it. The plans which are emerging provide for improvements at every stage.

For those who leave school at 15 there will be more craft apprenticeships to skilled trades. I.C.I. has now



... and await recognition

about 2000 apprentices in 25 different trades, and the number is increasing. Apprentices are usually able to pursue their studies in technical colleges, being released for one day a week from their employment. On the engineering side many of them are already finding their way into courses leading to National Certificates and even higher qualifications. The remainder qualify in their trades, usually by taking examinations of the City and Guilds of London Institute.

For those who stay longer at school there are to be more student apprenticeships. These are generally planned for boys of about 18, though some student apprentices are in effect promoted craft apprentices. Whatever their previous education, they receive special works training and day release to take National Certificates which are awarded at two levels, Ordinary and Higher.

The same kind of opportunity exists for those who enter service as laboratory assistants: the National Certificates can be obtained in chemistry, physics and metallurgy as well as the various branches of engineering. Those who persevere and attain Higher National Certificates will find that admission to the appropriate professional association (e.g. Institution of Mechanical Engineers and Royal

Institute of Chemistry) is within their reach, and that they can aspire to senior posts.

The National Certificate route is still long and hard, and many holders of the final award still feel that the prestige of a degree is lacking. The most recent developments therefore provide for:

1. The establishment of a national award (Dip. Tech.) which will aim at the standard and the reputation of a university degree.
2. The recognition of "sandwich" courses in preparation for such awards. A sandwich course is one in which the year is divided between industry and college—usually six months in each. The equivalent of a three-year full-time course will then take four or five years.
3. The recognition of a number of colleges of advanced technology with residential facilities offering both full-time and sandwich courses. The curricula will include both technology and liberal studies. The life of such colleges is expected to give the broader outlook and to develop the personal qualities usually associated with university education.

## INDUSTRY BEFORE THE MIDDLE AGES

A History of Technology, volume II, edited by Charles Singer, E. J. Holmyard, A. R. Hall and Trevor I. Williams (Clarendon Press. 802 pp. £8 8s.), is here reviewed by Gordon Cook

ONCE upon a time I regarded the "History of Technology" project pretty much in the same light as the Channel Tunnel. It was obviously a good thing which was badly needed; but, of course, it was one of those imaginative enterprises which would never actually come to anything in the end.

Well, the appearance of volume I a year or so ago showed how wrong I was. And now, just to show that volume I was no mere fluke, we have volume II in print. What is more, I am told that volumes III, IV and V are well past the teething stage.

This second volume of *A History of Technology* is well up to the standard that was set by volume I. It carries on chronologically where volume I left off, covering the period from, roughly, 700 B.C. to A.D. 1500. It bridges the gap between the early technology that we must study largely on the evidence of excavations, and the technology of the Middle Ages which had an impressive literature but was far from being tied to formal scientific thought.

Throughout the period covered by volume II most industrial processes remained quite small in scale. Distillation, for example, was a technique that had developed since the earliest times. Yet even by the Middle Ages the individual still was commonly of only a few gallons

This is the kind of programme on which the Government and the Local Education Authorities propose to spend £70,000,000 in capital development. Some of the new courses are already organised, and students are already being admitted.

The opportunities for a boy who cannot go to a university are now wider and better. He may leave school with a good record at 18 and become a student apprentice in an I.C.I. Division. He will generally be required to spend a preliminary period in apprentice training, with one day a week at a local technical college. If his work is good enough he may then be selected for admission to a sandwich course, during which he may be paid his apprentice salary and college fees.

He will be more committed than his schoolmate who has gone to a university, but in some respects his instruction will be more realistic. On the other hand, he will not be so narrowly specialised as his less fortunate colleague who has had to rely entirely on part time studies. And if he takes full advantage of the social and residential facilities he should at least be conscious of the human problems which enrich and complicate industry.

capacity. This was a consequence not of any difficulty inherent in building large-scale plant, but of the limitations imposed by the most readily available power source—the human muscle.

The lack of what we now regard as a scientific background to industrial processes brought some curious consequences. Once a process was established and was known to produce a certain result it might persist unmodified for centuries, even though it was unnecessarily tortuous and involved.

By the sixteenth century science was showing signs of concerning itself to some small degree in industrial pursuits. The period covered by volume II ends, therefore, at the point where our modern era of scientific industrial technology is beginning to evolve.

The editorial standard of this volume of *A History of Technology* is extraordinarily high. The format is attractive, and there are more than 700 illustrations which have obviously been chosen and prepared with the greatest care.

It would be idle to pretend that *A History of Technology* at eight guineas a volume is a book that many of us will be able to purchase for our personal use; we must be content to dip into volumes in the library from time to time. Of one thing we can be quite certain: every library worthy of the name will have its copies.



# Monotype Setter

To describe a Monotype keyboard as just a glorified typewriter which punches holes in paper is to incur Percy Humphries' displeasure. "It's not nearly so simple as that," protested Percy, who is chargehand Monotype keyboard operator at The Kynoch Press, which is part of Metals Division.

He launched into a detailed explanation of just how the machine works. Where a typewriter has four rows of keys, the Monotype machine has two blocks of fourteen rows, comprising as many as seven alphabets: roman UPPER and lower case, italic *UPPER* and *lower* case, bold face **UPPER** and **lower** case and SMALL CAPITALS. Added to this, the layout of the keyboard varies with different type faces. All told there are about two hundred different faces in the Monotype series, but that includes exotic alphabets such as Russian and Greek. At The Kynoch Press they have about fifteen in regular use (including Imprint, used for the *Magazine*).

"I've just the job here," grinned Percy: "next month's 'One Man and His Job'." I watched fascinated as he began tapping out the familiar copy on the keyboard at what seemed to me to be a tremendous speed. About seven or eight thousand characters an hour was Percy's estimate of his speed. On a long job—a whole book, perhaps—Percy reckoned he might work up to a speed of 9000 characters an hour; while more complicated jobs like the foreign editions of *Endeavour* bring his speed down to only 4000 or 5000.

The *Magazine* copy was, I gathered, considered "a piece of cake" by the keyboard operators. A one-page job like this article takes about half an hour. For each key tapped, two holes are punched in a reel of paper suspended over the keyboard. Later, when the reel is completed, it is passed to the casting department.

There the reel is fed on to a casting machine. Jets of compressed air passing through the perforations on the reel move the matrix or type mould at lightning speed to

the position for a jet of molten metal to be injected into the appropriate letter mould; in a fraction of a second the letter is cast and delivered on to a metal tray called a galley. The whole process is automatic, and I found it somewhat startling to see line upon line of perfectly spaced out type gradually assembling on the galley.

The secret lies with Percy Humphries and his fellow operators back in the keyboard room. As in typing, the operator has to calculate the number of words he can get into a line. Only on the rare occasion do you get an exact fit, and to give an even margin down either side of the column the size of the space between the words is increased. The exact measure of increase, called the justification, is punched on to the reel at the end of each line. On the casting machine the reel is run off backwards, so that the spacing is adjusted before the line is set in type.

I asked Percy Humphries what his work consisted of. "Well, I.C.I. is our main customer, of course, but we do all sorts of outside work," he told me. "We print most of the Company's sales literature. Then there is *Endeavour*—that's another big job."

A Birmingham man born and bred, he has been in the printing trade all his life. He joined The Kynoch Press just over seven years ago. They say that Monotype operators are born to the job, not made. Percy was not quite as sweeping as that, but he did admit that it is not everyone's job. For himself, from the day when as a fifteen-year-old apprentice at a local printers he first saw a Monotype machine in action (the operator, incidentally, was Bill Trout, now also at The Kynoch Press), he never had any doubts about the job for him.

When I was up at The Kynoch Press I saw last month's "One Man and His Job" article being set. A couple of days afterwards Percy was going through the same routine again—with one difference. This time it was a case of "Me and My Job."

A.E.B.



Percy Humphries





# Garden Notes

By Philip Harvey *Illustrated by Miles Chance*

FOR many years now a rather absurd statement has appeared every year in the catalogue of a well-known gladiolus specialist. He claims that modern gladioli are "as easily grown as mustard and cress." Admittedly these plants are relatively easy, given careful soil preparation and sufficient moisture during the growing season, but are they really as foolproof as mustard or cress? Anyway, no gardener worth his salt really wants a plant which makes no demands whatsoever on his time or skill. I refuse to believe that this piece of nonsense has the slightest pull with regard to sales. All of which does not alter the fact that the "culprit" continues to breed some of the finest gladioli available today.

A soil that does not dry out too easily is desirable for best results, otherwise it is immaterial whether your land is light, medium or heavy, provided drainage is satisfactory. Generous quantities of peat will help to lighten heavy land; conversely, peat will make light land more retentive of moisture. Other humus-forming materials such as hop manure, leaf mould and compost should be freely mixed with the soil before planting. If you add farmyard manure make sure it is well rotted, and never allow it to come into contact with the corms. Bonemeal provides a relatively slow-acting source of phosphates which stimulate root action, and this material can be mixed with the top spit

at about 4 oz. per square yard (the exact rate is unimportant).

The large flowering gladioli should be planted 8 in. apart, the corms being covered with not less than 4 in. of soil if the ground is light. Two inches will often suffice where the soil is heavy. The Primulinus varieties are planted at the same depth, but the corms may be planted more closely, say 6 in. apart.

On heavy ground it is a good plan to place some sharp sand beneath and around each corm to prevent rotting. Staking of gladioli is often unavoidable in a wind-swept position, although the Primulinus varieties can usually be safely planted with little risk of the spikes bending or breaking. Staking is best deferred until just before the bottom flowers start to open, as one can then tell which way they will face. Each stake should be about 3 in. from the base of the plant. Two ties are advisable, one just below the top of the spike and another beneath the lowest bud.

How about varieties? The large-flowered section comprises a much wider range than the Primulinus, and one can only suggest a few which are equally reliable for garden display or cutting.

The creamy salmon-pink Picardy is still very popular, although the newer Evangeline, probably best described as light rose with ruffled blooms, is a serious competitor. For a really vivid red I can recommend Firebrand,

a brilliant orange-scarlet with a velvety sheen.

Good yellows include Gelber Hercules, Hopman's Glory and the newer Flowersong. White gladioli, in common with white daffodils and roses, are decidedly less popular than other colours. Snow Princess was a great favourite in the 1930s and is still worth growing. It increases very rapidly. Newer whites include Snowflake, La Paloma Blanca and Florence Nightingale, a Canadian variety with huge ruffled flowers on rather tall spikes. If, like me, you favour brown and allied shades, try Arabian Night, which is deep mahogany brown, or Black Jack, which is really blackish brown. Abu Hassan is violet-blue with a darker blotch, and Lavender Dream a soft silvery lilac.

Among the Primulinus varieties I would single out Salmon Queen (salmon and orange); Vuurbaack (dark red, the English translation being Beacon Light); Atom (scarlet with a picotee edge); Ivory Queen (ivory white and mauve).

Have you thought about the plantains, daisies and the like on your lawn? On my heavy soil daisies are the worst lawn weed, and a warm spell in April or May soon brings a major infestation unless 'Verdone' is applied promptly. In spring or summer two applications at 2-3-week intervals are essential (in my garden, anyway!), but in early autumn one application is usually sufficient. In com-

mon with plantains, starweed and dandelions, daisies have a rosette type of growth, the plants being pressed close to the soil, so that they often escape the blades of the mower. Pearlwort flowers and seeds below the level of the blades. Incidentally, the old test to see if the blades are sharp enough for really keen cutting is still reliable. If they refuse to cut a piece of paper cleanly at any point they must be sharpened, otherwise the grass will be bruised.

Vegetable sowings for April include cauliflowers for cutting in late summer and autumn. There is no denying that cauliflowers are the most tricky of all brassica crops. They dislike cold, east winds and prolonged dry weather. If cauliflowers look dejected during a drought, you should bend over one or more of the inner leaves to protect the heads from hot sunlight. This crop should always be cut before the curds start to open, since a cauliflower with the dew still remaining is far better for the kitchen than one cut in the afternoon, when the head is relatively dry. Make your sowing as early as possible in the month and puff a little 'Seed-Saver' directly into the seed packet to ensure maximum germination and freedom from damping off. All The Year Round is one of the best varieties, as it can be sown at practically any time of the year, provided the seedlings are never exposed to frost. It makes a short-stemmed, compact plant.



# Farewell to China

By R. J. Sheppard

Mule carts, floods, a carload of silver dollars, a bottomless pool by a rustic temple—these are some of the author's kaleidoscopic impressions of the romantic China of the past, where I.C.I. and its forerunners traded far into the interior.

*Colour photograph by P. R. Sandars. Drawings by Bruce Petty*

**L**AST year the last of the Company's offices on the Chinese mainland closed.

The news of withdrawal brings sadness to those who took part in those first fifty years—and a flock of memories. One's first up-country trip—the uninspiring town which was its principal objective and equally uninspiring premises of our agents therein (how ever does he manage to sell hundreds of tons of soda ash each year?); checking agents' consignment stocks, selling prices and market coverage; visits to the main local consumers of our products, block soda makers, soapworks, dyehouses, all on very much of a "cottage industry" scale, but making up in numbers for small individual size; the ever-present following of curious children!

Fertilizer work—elaborate campaigns to be planned and the results; posters, wall paintings and demonstration plots scattered all over the countryside to be inspected; field trials, with the harvests always seemingly coming in the hottest week of the year; the difference between irrigated land the owners of which could afford fertilizers, and unirrigated, which was a different story!

The long, slow journeys using traditional native transport—mule carts, sedan chairs, donkeys and what not—uncomfortable but utterly reliable and giving perfect opportunity for seeing and coming to understand the real China; the more newfangled devices—

rickshas, bicycles, buses and planes, which *could* get you there quickly, but very much D.V. and W.P.; the extraordinary variety of transport which could be involved in a single trip—can anyone beat sedan chair, motor launch, ricksha, small river steamer, plane, car and another ricksha all in one day (Chungking/Chengtu, 1935)?

What of the Chinese themselves—the simple peasant, the ordinary man, of this vast land?

Industrious? Observe the farmer in his field, the tailor with his needle, the labourer carrying his load, the fisherman repairing his net and the clerk at his abacus. Count the weight and virility of Chinese minorities in many Asian countries. The diligence of the Chinese is not forced. It derives from an inbred acceptance of work as an antidote to frustration. Let the clock tick on, there is work to be done.

Hospitable? Chinese hospitality is natural. It springs from the heart; it is the custom.

Good humoured? Look at the lines on the ancient peasant's face. Read the sadness there, for he is sure to have suffered at the stern hands of nature and from the harshness of man-made upheavals. But those creases running fanwise from the eyes across the temples and the wrinkles round the mouth are eager to mark a smile or a laugh. That is how they came to be there.

Religious? Not in the Western sense of the word.



**Kowloon in 1954.** Kowloon is the industrial area of Hong Kong and is on the mainland opposite Hong Kong island. Nearly all of the level ground visible in the picture has been man-made since Hong Kong became a British Colony less than a hundred years ago. Hills were demolished and the rock was used to reclaim land from the sea. This work still goes on.

Chinese worship is not delineated by glorious edifices of worship or by weekly ritual. It follows custom, folk-lore and superstition strange and pagan to the casual observer, who often forgets that some of his own native rituals are bizarre to others. Chinese ritual, in some ways as blunt and naive as a child praying to God for a gift, has as its principal motif the driving out of evil and the promotion of good and, as a secondary but important motif, entertainment. Many Chinese smile deprecatingly at their own superstitions, but they usually give homage to them one way or another, sometimes in the manner of the agnostic who is playing safe.

These are the sort of memories in which many will share. Additionally, there are those of the more personal experiences, recounting of which provides the entertainment at any gathering of old China hands.

Of a rush visit in 1936 to the old walled city of

Fancheng on the Han River. A cloudburst was reported to have inundated the city, destroying consignment stocks belonging to the Company valued at some £30,000, and urgent inspection by a responsible person was necessary for insurance purposes. On arrival at the disaster area it was learned that a sudden cloudburst at night over neighbouring hills had resulted in a raging torrent which breached the massive city walls in several places, wrecked many of the buildings, and left a toll of death among the totally unprepared population officially estimated at some 77,000. The water had cleared in thirty-six hours, leaving a scene of desolation enlivened in the vicinity of our agents' premises by colourful patches showing the fate of British dyes, and everywhere by sight of the people busy erecting new houses—apparently cheerfully and very much as though it was all in a day's work.





Of climbing a range of mountains years ago, when still young enough for that sort of thing. It was a long three days' journey. Towards evening of the second day the tired traveller asked a Chinese peasant how far it was to the next check point.

"Going or coming?" was the unexpected counter-question.

"Going," answered the traveller.

"Six li," said the peasant laconically.

"Coming—how far?" asked the traveller curiously.

"Three li," said the peasant.

It took some considerable effort, in halting Chinese, to learn the peasant logic to this anomaly. Going was uphill!

Later, the traveller was hospitably housed in a rustic temple. Outside the temple wall was a sparkling blue mountain pool. He undressed and took to the tempting waters. The priests were horrified. "A sacred pool!" thought the traveller, aghast at his error. No, it was not that. The pool was superstitiously regarded as bottomless, and in that remote mountain sanctuary, where men "swam" only up to their knees, if at all, it was inconceivable that the traveller could escape from the pool alive. He did, and was roundly admired.

Of a spectacular demonstration of Gresham's law\* when for a brief period in the Tsingtao area paper currency unaccountably commanded an appreciable premium over silver dollars, both being legal tender. Notes just disappeared, and the physical problems of handling silver dollars which came out of hiding by the million reduced commercial and banking activities to near-chaos. Sharp personal impact came to one of our staff who was delegated to take the office car and collect a substantial payment due from a factory some eight miles out of town. With the silver loaded, the car was literally down on its back axle; and great was the relief when the cautious drive to the bank was safely completed.

The old days have gone, and indeed their demise dates from the mid-30's, when first economic and then political upheavals forced a progressive contraction of the Company's activities to the main towns, but the basic work had been done and the products of I.C.I. and of the China company's outside principals were widely known; perhaps more important still, something was understood throughout the country of the Company's desire not only to sell, but to serve.

\*Bad money drives out good.

And what of the future? On the China side there must be much of "wait and see." The People's Government has been engaging in a complete reshaping of the country's internal and external trading methods to a nationalised pattern, and the improvisations of the reshaping period have been confusing and a questionable guide for tomorrow.

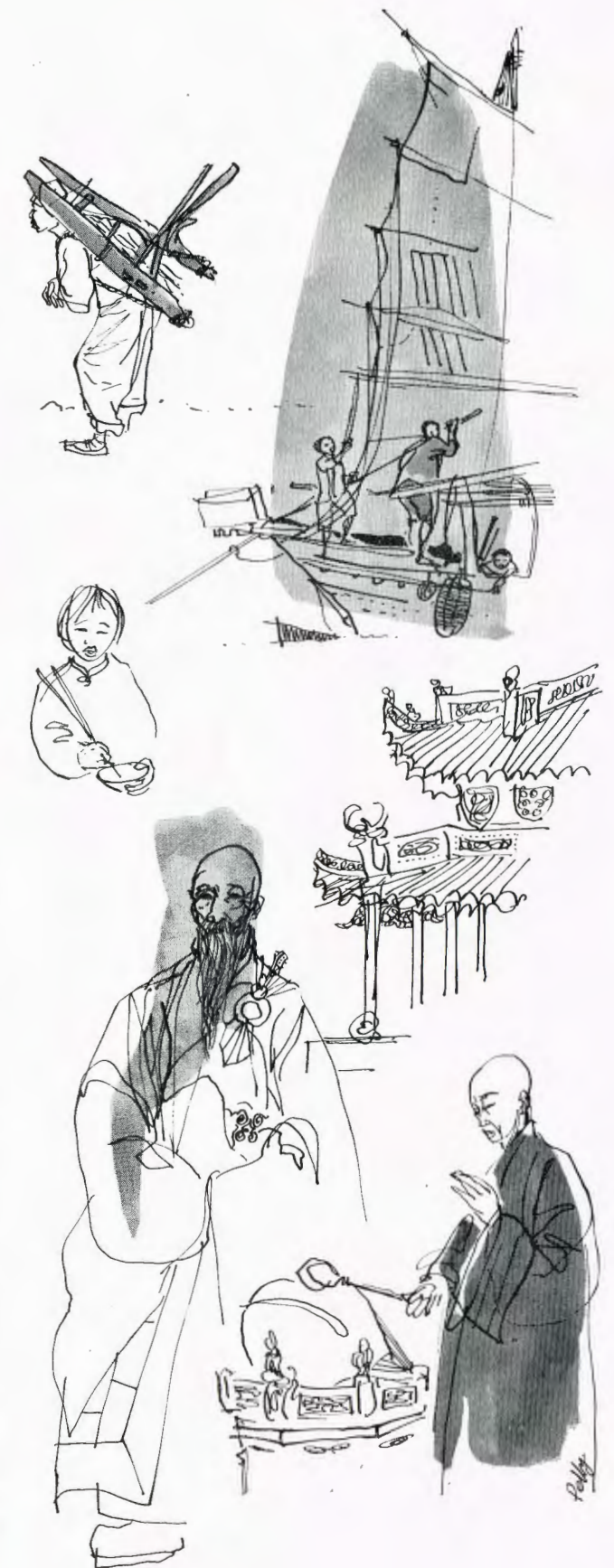
What is in no doubt, however, is that the country is intent on and making great progress with industrialisation, with improvements in agriculture and animal husbandry, and with care of public health and the provision of medical services. All this cannot but add up to an increasing demand for many of the materials which the Company can supply, and our task is to continue to follow and to adapt ourselves to the methods by which trade of the future can be conducted. The brunt of this task now falls on Hong Kong Office, and recent success in widening contacts between this office and mainland trading organisations is a hopeful augury.

While the mainland picture has been disappointing and remains uncertain under the heavy incubus of government planning and control of trade, the China company has not been entirely without encouragement.

Hong Kong, facing a heavy decline in its traditional trade with China, has turned for salvation to the development of industries within its own borders. With only a tiny domestic market these have had to produce primarily for export; but resource and energy have made quite a success story of this formidable task, and Hong Kong industries provide a valuable and expanding market for I.C.I. materials.

Other East Asian countries served by Hong Kong, from Korea in the north to Vietnam in the south, have in their new-found freedom become more accessible to British trade than was the case pre-war and, with many of them embarking on industrial development, offer decidedly encouraging possibilities.

I.C.I. (China) is in fact putting a considerable amount of development work into these territories. Our staff of today has to battle less against buyer resistance than against that bane of the post-war commercial world, import licensing and controls; their field is primarily the new and up-to-date industries springing up round the larger cities rather than the byways and hedges of a vast countryside. Much of the romance may have departed, but there still remains the spur of much to be achieved if ways and means can be found.





# SKYE

By B. R. Goodfellow

**Skye is further from London than Switzerland and probably less well known to most Englishmen. But whatever Samuel Johnson thought of it, the island has many good things—some real mountains and a whisky distillery among them.**

*Colour photographs by the author*

**T**HERE is nowhere in Britain like Skye. Nor indeed do I know of any other part of the world where broad empty moorlands, long sea inlets, jagged black peaks, rushing clear streams, a soft climate of mist and blue distance, and romance of savage history are so combined. Few parts of Britain are so little visited, especially by southerners. The journey is long and slow; Skye is further from London than Switzerland, and travellers quite wrongly fear that the far north will always be cold and wet.

Samuel Johnson thought nothing of the place, as his Boswell has faithfully recorded. He found the journey a tiresome drudgery and noted the scenery only as a topic for later conversation. But the Doctor was a townsman at heart, and in 1773 it had not become fashionable to appreciate scenery untouched by the hand of man. And he went there in September, which is not the best of seasons. He was more interested in the people of Skye, the endlessly warring clans of Macdonalds and Macleods; in Flora Macdonald, who had then quite recently smuggled Prince Charles Edward into Skye in disguise during the hue and cry for him after Culloden; and in the Macleods, who had lived in their stronghold, Dunvegan Castle, since the twelfth century. They live there still.

If the journey to Skye is long it is infinitely rewarding, for the route by rail or by road passes through some of the finest scenery of the western Highlands. The roads are still so narrow and rough that a pas-

senger will often find his admiration of the views tempered if his driver is similarly allowing his attention to wander. After crossing the last ferry at the Kyles of Lochalsh one's first impression of Skye is the size of the place, for Skye is as big as an average English county. Yet barely ten thousand people live in the entire island—a quarter of them, perhaps, in the charming little capital town, Portree, and most of the rest in widespread little communities between the moorland and the sea.

Between are the great expanses of peat and heather, and one may travel ten miles along an unfenced road and see neither a house, nor a tree, nor any living thing save sheep and birds. In the middle of the moorland rise the dark jagged hills of the Cuillin, and every distant view is across the sea, and beyond the sea, in clear weather, the Outer Hebrides or the mainland of Scotland.

The people of Skye are hardy folk; until quite recent times their life must have been a tough struggle for survival. It is too far north, and too wet and stormy for much of the year for the soil to support

any crop except potatoes, and an occasional field of oats in a sheltered corner. They live mostly by sheep, and keep a few cattle; but most of their food comes to them by sea. Their only fuel is peat; in the dry days of early summer the whole community will turn out to cut peat from deep trenches in the moors, stack it to dry and bring it in on saddle packs or rough carts to their cottages, often many miles away.

When I first visited Skye, over thirty years ago, the crofters lived in conditions so unbelievably primitive that it was hard to realise one was in Britain in the twentieth century. Many of the crofts, which could have changed little in centuries, were one-roomed stone huts with thatched roofs weighted down with

stones, and without windows or fireplaces. A peat fire burned in the middle of the bare earthen floor, and the smoke found its way up through the blackened thatch and out through the door.

It is little wonder that the sons of Skye found their way to the ends of the earth, where, as in New Zealand, they could apply their skill in raising sheep to greater profit and could live in a more congenial climate. But now things are much better. The price of wool is higher, tweeds are woven on the Island at Portree; neat modern cottages have replaced the shielings, and hydroelectric power has brought light and heat to most of the crofters' homes.

The visitor to Skye will go there, if he is wise, in



*Shepherd's cottage in Glen Sligachan*





Rock climbing on Sgurr Dubh, which rises 3098 ft. above Loch Coruisk

May and June, when the weather is most likely to be good and before the midges, the scourge of the north, have begun to make the open air intolerable. In the early summer it is fine as often as not, and really fine weather in Skye is weather not soon forgotten. And the days then are long; for Skye is not so very far from the midnight sun, and on midsummer's day one can read a newspaper within an hour of midnight.

There are excellent hotels or, for those who prefer it, accommodation at many of the cottages or at a youth hostel under the mountains. They have a splendid tradition of service to those who come to Skye to enjoy the open air and the long days.

One day last June our party came down late from the hills after a long day in faultless weather. At a cottage where we had left our car they gave us tea, with bread, butter, jam and cakes at 10.30 p.m. in the garden in the evening sun. When we got back to our hotel after quite a long drive we were served with a four-course hot dinner after midnight.

But the weather is not always fine. Sudden storms can turn the gentle hill streams in an hour into raging torrents impossible to cross, and the wind can blow mist and driving rain low over the moors for days on end. The traveller to Skye is wise to be a fisherman.

Skye is no place for the walker. The few tracks are rough and sometimes difficult, and the distances are great. Even the scenery is scarcely enough to compensate one for the toil of trudging over the sodden moorland bogs. But the Cuillin Hills are a paradise for climbers. This is the only group in Britain which rises to the dignity of real mountains, and their character is unique.

Geologically the Cuillin are something of a show-piece: they are formed of hard volcanic rock which has endured the fierce erosion of the Ice Age. The rock—gabbro—is rarely found elsewhere in Britain. In the corries, the high valley hollows under the hills, one sees the best examples of rock slabs polished and



Peaceful scene on one of the island's beautiful lochs, Loch Brittle

scored by the action of glaciers long since vanished. Although some of the 3000 ft. summits can be reached by a determined walker, it calls for real mountaineering skill to traverse the ridges joining peak to peak round the horseshoe. Even the most experienced climber will find plenty of interest seeking the route and will often be glad to be roped.

The traverse of this whole ridge in the day is the biggest mountain expedition in Britain, and a long one which involves 10,000 ft. of ascent and descent. It needs skill too to pronounce the extraordinary Gaelic names which have been bestowed on these mountains. One of the most shapely is called Sgurr à Ghreadaidh; this name, they say, is derived from the Icelandic, is pronounced "Greta," and means "the peak of clear waters." Yorkshiremen will recognise the same name in the well-known tributary of the Tees. On the flanks of the Cuillin are many fine precipices which are a splendid rock climbers' playground. The purplish-red gabbro rock with weathered crystalline

surface is so rough that to climb it is easier than it looks, but after a fortnight few return without lacerated finger-tips.

On the summits one is always near the sea—sometimes so close below it seems that one could throw a stone into it. And across the sea, island after island; the strange-sounding trio of Rum, Eigg and Muck, and in the far distance always Ben Nevis himself, over fifty miles away and snow-capped for most of the year.

For days of rest the sea gives the perfect contrast. Sandy coves lie under some of the highest cliffs in Britain. Seals laze on the rocks, and bird lovers can enjoy every variety of sea bird: puffins flying fast and arrow-straight, guillemots and oystercatchers, and all varieties of gulls.

Finally one may pay a call at the famous Talisker distillery, and it is not unknown for the friendly manager to offer his visitors a sample from the 21-year-old vat of whisky reserved for the directors.



# NEWS IN PICTURES



**Nine brothers, and they all work in Alkali Division.** The Wrights have 181 years' service between them; they are (from left) Fred (the youngest, 31), Jim, Bill, Jack, Alfred, George (the eldest, 56), Tom, Sydney and Raymond. Five of them work at Wallerscote, two at Winnington, one in Construction Works and one in Avenue Works



**T.U.C. Chairman** Sir Thomas Williamson visited Blackley Works of Dyestuffs accompanied by Mr. Tom Eccles and Mr. S. Hill of the National Municipal Workers. Right: Mr. Hill, Sir Thomas, Mr. R. n Labour Manager), Mr. Eccles and Dr. J. Avery (Division e: Sir Thomas has an informal meeting with shop stewards



**The Pilgrim Fathers'** journey to America will be retraced th in a Brixham shipyard. Among her cargo will be 40 pairs of cry is sending to important customers and contacts in the U.S.A.



is spring in a replica of the "Mayflower" now being fitted out (above) stal goblets (left) made by Stuart & Sons Ltd. which Alkali Division Pharmaceuticals Division is sending copies of Culpeper's Herbal



**Highest award of the Institute of Welding, the Larke Medal,** was given to Mr. Edwin A. Taylor and Dr. D. C. Moore of Metals Division for their joint paper on the welding of copper



**Dying Duck.** Billingham's steam crane No. 1, better known as "the duck" from its down-to-earth appearance, is being pensioned off this month after 29 years' service on the site

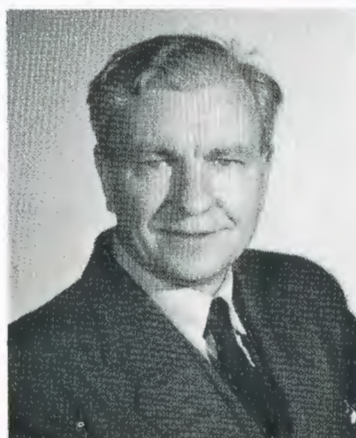


**I.C.I. in the Antarctic.** When the "Magga Dan" arrived at Shackleton base she brought explosives and detonators contributed by Nobel Division for the Commonwealth Antarctic Expedition's seismic work. Also on board was Mr. David Cansfield, on leave of absence from Fibres Division to act as an observer with a Royal Society scientific expedition. (Picture by courtesy of the Transantarctic Expedition)





**Dr. Maurice Cook** has been appointed chairman of Metals Division. Aged 59, he joined one of the constituent companies of I.C.I. in 1926, and became Research Manager of Metals Group in 1938, a director of Metals Division in 1942 and Joint Managing Director in 1951



**Dr. J. S. Gourlay**, new chairman of Paints Division, joined Nobel Division in 1919. Later he was transferred to Paints Division, where he became Assistant Development Manager in 1938, Research Manager in 1945 and a director two years later. Since 1952 he has been Joint Managing Director of Plastics Division. He is 52



**Mr. J. C. H. McEntee**, formerly Managing Director of Wilton Council, has now been appointed chairman of the Council. Aged 50, he has been in I.C.I. since 1929, for most of the time in Alkali Division, where he became Works Manager of Winnington Works in 1948. He joined Wilton Council as General Manager in 1950 and became Managing Director in 1956



**Mrs. B. L. Jones**, who has retired after 44 years as a telephone operator at Huddersfield Works, was Read Holli-day's first woman operator when she joined them in 1912. Her father completed 43 years with I.C.I., and her brother and husband have served 40 and 30 years



**Ideal Home Exhibition.** Plastics were featured on the I.C.I. stand on show in the "shop windows" (above), and inside was an all-plastics kitchen (below), where uses of 'Perspex,' 'Darvic' p.v.c., 'Vynide' and nylon were shown



An all-glass plant, 25 ft. high, has been built at Research Works, Billingham, for experimental work. It is housed behind a brick wall with three viewing windows and is run for the most part on instruments



**Mr. Stanley Linford**, a technical clerk in Wilton's central workshops, has accepted an invitation to be next mayor of Redcar; he will take up his duties on 22nd May. He has lived in the town for almost 50 years and has done much local council work since being elected in 1947



**Mr. Tom Keelan**, in charge of the Plastics Division training centre at Darwen, is to be next mayor of Darwen. First elected to Darwen Town Council seven years ago, he is chairman of the health committee. He has been with I.C.I. for 28 years



# PICTURES FROM OVERSEAS



**Australia.** As part of the British-Australian contribution to the International Geophysical Year, rockoons—giant 'Visqueen' balloons carrying rocket missiles—will be sent 60,000 ft. up over Woomera rocket range. Fired automatically at this height, the rockets will carry scientific instruments and transmit information to scientists on the ground. The balloons, 80 ft. high and 25 ft. in diameter when inflated, are being made at Bristol University, England



**Venezuela.** H. Kern y Cia, I.C.I.'s agents in Venezuela for heavy chemicals, dyestuffs, pharmaceuticals, plastics and fibres, have opened new offices in Caracas. There is a large basement store-room, and the building is so constructed that additional upper floors may be added



**Japan.** At a ceremony in Tokyo Mr. G. H. Dickson (left, centre), president of I.C.I. (Japan), received a gold watch for 27 years' service from Mr. P. C. Allen, Fibres Group Director. Also in the picture are Mr. P. R. Gaine, a director of I.C.I. (Japan), Mrs. Dickson, Mr. E. Hodgkin (Overseas Dept.) and Dr. F. J. Siddle (Managing Director, Fibres Division)



**Leisure and latitude.** While members of I.C.I. (Export)'s Zürich office enjoyed a Sunday ski outing in latitude 47°N., in latitude 35°S. staff of the 'Duperial' company in Uruguay picnicked under eucalyptus trees on a beach near Montevideo



**Canada.** By making Gord Young (left) of won I.C.I.'s first international pipe-smoking contest. Opponents to the six-man C.I.L. team gate, who had

2.3 grams of tobacco last 49 minutes 37.5 seconds, C.I.L.'s Millhaven Technical Service Department national pipe-smoking contest. Opponents to the were members of I.C.I. Fibres Division at Harrogate, who had



# I.C.I. NEWS

## MR. P. K. STANDRING RETIRES

MR. P. K. STANDRING, director in charge of the Dyestuffs and Pharmaceuticals Group, retired on 31st March after a career of 40 years with I.C.I. and its associated companies.

*Mr. C. Paine, director in charge of heavy chemicals, writes:*

I remember P. K. Standring joining the Blackley staff of Levinstein Ltd. in 1917 as a young man with the ideal build for a fast bowler, an attribute which he used successfully in northern cricket for a number of years. He graduated at Manchester University and worked with Dr. Chaim Weizmann, the future President of Israel, on the fermentation process for acetone which became of importance in the first world war. In later years his colleagues in the Pharmaceuticals Division were reminded of this experience when problems of penicillin production came under discussion.

Shortly after joining Levinstein's Standring was moved to the synthetic indigo factory at Ellesmere Port which the German firm of Meister Lucius and Brunig had built to fulfil the requirements of the Patent Act of that time. This factory had been purchased by Levinstein's from the British Government, who had confiscated it at the outbreak of war. It was, in fact, an incomplete factory, and "P.K." was in the midst of the early struggles to get it working smoothly.

As Levinstein's evolved into British Dyestuffs Corporation and later the Dyestuffs Division of I.C.I., Standring became in turn works manager at Ellesmere Port, works manager at Blackley Works, and manager responsible for all the Division factories. He was appointed a Dyestuffs Division director in 1944 and progressed through the managing directorship to Division chairman in 1951.



In 1952 he joined the I.C.I. Board as Group B Director.

He has always been a strong advocate of the view that a works manager should not only be a good administrator but must keep himself technically up to date and quick to apply new science to his factory. His own career set an example in this and leaves the Division in which he served the richer for it.

"P.K." was a pioneer in the Company in the early beginnings of what has now become work study.

In later years golf has replaced cricket in his interest. He is a keen fisherman and a knowledgeable gardener. All his old colleagues in Group B and elsewhere in the Company will remember many kindnesses, some pungent criticism, and much sound advice from him. All will wish him many years of happy retirement, with health to enjoy large fish, small scores and a wealth of blossom.

## CHAIRMAN'S PROGRESS

Sir Alexander Fleck was flown home to England from India, where he had fractured his leg in a fall, at the end of February. He is now in London, and his progress is considered very satisfactory.

## CHEMICALS AND COMMON MARKET

Mr. S. P. Chambers, a deputy chairman of I.C.I., was one of the speakers in the television programme *Panorama* on 18th February, when the European common market was discussed.

Mr. Chambers expressed the view that if a European common market were set up it was essential that Britain

should be associated with it. Europe was the chemical industry's best market, and if we stayed right outside the scheme we should find ourselves no longer competing on even terms with German manufacturers in such markets as Holland, because German goods would go into these markets free of duty, whereas British goods would be subjected to a high tariff.

If, on the other hand, we were inside a European free trade area, British goods, while competing on even terms with German and other Continental goods, would have an advantage over American competition, which would have to pay duty to get into the area.

It was true that under any free trade area scheme Continental goods would be able to come into Britain free of duty; but Britain depended so much on exports that if some British industries were unable to stand up to European competition it might be a good thing for industrial resources to be transferred from those industries to other industries that could. This would put British industry as a whole and British exports on a more competitive and firmer basis.

## CALLING DOG-LOVERS

Last year Dr. S. Tuchner of Pharmaceuticals Division attended the I.C.I. gala day at Northwich. It included a dog show organised by the local canine society, and Dr. Tuchner was so struck by the size of the entry (800 pedigree dogs—most of them, he says, owned by I.C.I. people) that it gave him an idea: why not start a club for I.C.I. people all over the country who own pedigree dogs registered with the Kennel Club?

The immediate aim would be to organise a championship show for various classes of pedigree and sporting dogs. Dr. Tuchner himself was formerly a breeder of Italian whippets, which won many prizes on the Continent in pre-war days. Not long ago he noticed in Devonshire a breed of small whippet resembling the Italian in colour and temperament, and with one of these, Zebo of Shireleymoor, he won a prize in the class of varieties at Northwich.

Dr. L. B. Wevill, a director of Pharmaceuticals Division, has consented to be a patron of the club if enough support is received to form one. Anyone interested should write to Dr. S. Tuchner, Technical Services Intelligence Section, Pharmaceuticals Division, Fulshaw Hall, Wilmslow, Cheshire.

## HEAD OFFICE

### Retirement of Mr. Leigh

Mr. S. P. Leigh, who retired as Overseas Controller on 31st January, joined the United Alkali Co. in 1921 after war service in which he was severely wounded at Gallipoli. In the early 1920s he covered most of the world as the Company's overseas travelling representative, and after the formation of I.C.I. in 1926 he was closely identified with the development of I.C.I.'s overseas interests. He was appointed Overseas Controller in 1944.

## NEW APPOINTMENTS

Some recent appointments in I.C.I. are:

### Dyestuffs Division

Dr. C. R. Mavin. A managing director.  
Mr. R. S. Wright. A director.

### General Chemicals Division

Mr. H. Smith. A managing director.

### Metals Division

Dr. M. Cook. Chairman.  
Mr. St. J. de H. Elstob. A managing director.  
Mr. W. N. Ismay. A director.  
Dr. W. H. G. Lake. A director.

### Nobel Division

Dr. J. M. Holm. A managing director.  
Dr. W. A. Caldwell. A director.  
Dr. A. D. Lees. A director.

### Paints Division

Dr. J. S. Gourlay. Chairman.

### Wilton Council

Mr. J. C. H. McEntee. Chairman.  
Mr. R. E. Newell. Managing director.  
Mr. J. Grange Moore. Works and personnel director.

### The Regions

Mr. E. Holmes. Plant Protection sales manager, Southern Region.  
Dr. L. M. Smith. Regional sales manager (Plastics), Northern Region.

*Mr. A. E. Gawler, who was deputy Overseas Controller from 1950 to 1955, writes:*

On its formation I.C.I. inherited many overseas assets and interests from the merger companies, including what was even then a relatively substantial export trade. In the nature of things, however, these tended to be specialised and limited in scope, and in the intervening years it has been I.C.I.'s policy to co-ordinate, enlarge and broaden the bases of its overseas activities to match the developing pattern at home. Most readers will be aware of the impressive result.

By virtue of the positions he held, Peter Leigh was cast for a prominent role in all these activities, in particular in the building up of the commercial and administrative apparatus which comprises the existing I.C.I. overseas organisation and in giving impetus to what has now become a very large (by any standards) and still growing export trade from the United Kingdom. Membership of the boards (in the capacity of home director) of many overseas companies and, more recently, trusteeship of the Pensions Fund and chairmanship of that maid-of-all-work I.C.I. (Export) Ltd.—not to mention a period as visiting



Mr. S. P. Leigh



director of the Dyestuffs Division—also gave him an opportunity of gaining and bringing to bear an extensive knowledge and experience on I.C.I. affairs in general.

Apart from taking this important share in the Company's material progress, he also earned the regard of scores, perhaps hundreds, of colleagues and friends, both inside and outside the I.C.I. family, in many parts of the world. Indeed, there can scarcely be any sizeable country in the habitable globe where Peter Leigh is not known personally or by his works.

An enthusiastic yachtsman for many years, he took, literally, to the land some time ago. Now, immersed in rural pursuits on his Surrey farm, with membership of the Dorking and Horley Rural Districts Council to keep his critical and persuasive powers from rusting, he may still have little time for leisure, or at least idleness. Whenever he can look back, however, it will be with the quiet satisfaction of one who has taken a full part in a long era of advancement in the Company's fortunes abroad.

## ALKALI DIVISION

### Youth Cup Winner

The Alkali Division's Inman Youth Cup has been awarded to Roy Hulme, an apprentice instrument artificer who was 18 on 23rd March. Roy thus becomes the second holder of the trophy, which was first presented last year by Mr. W. M. Inman, shortly before he retired from the



Fellow apprentices at Avenue Works gather round to congratulate Roy Hulme on winning the Youth Cup

position of Division chairman. It is presented annually to the apprentice or process trainee who, in the opinion of a panel of senior management, has done the best year's work both at school and within the factory.

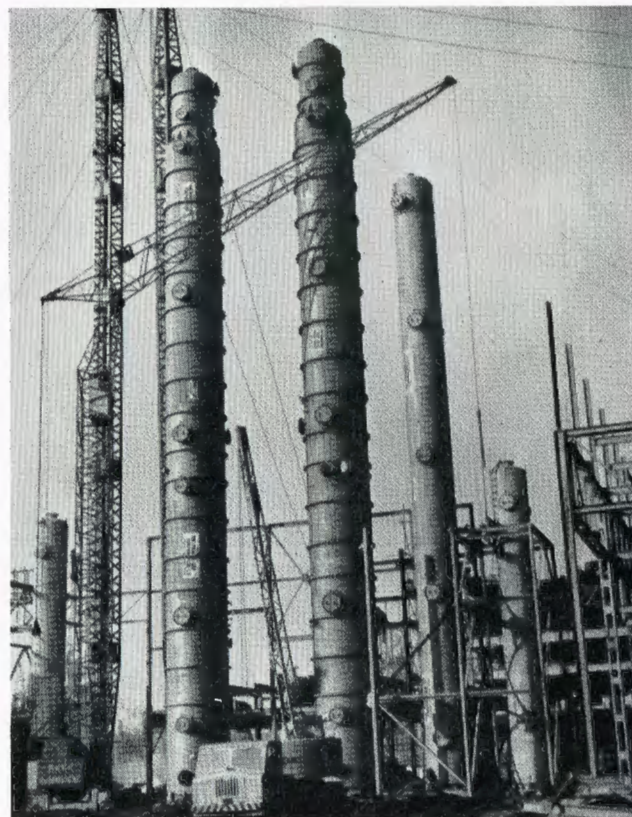
Presenting the cup to Roy on 13th February, the Alkali Division chairman, Mr. J. K. Batty, said the fact that the cup was being given to one particular boy reflected no discredit on the others. On the contrary, the panel had been impressed by the high standard of achievement among the boys of 16 and 17 in the Division.

## BILLINGHAM DIVISION

### Break with Coal

Billingham's oil gasification plant, now being built, is unique in Britain. Nowhere previously in this country has this series of processes been grouped together to produce gases for ammonia manufacture.

This complete break from the long-established method



Already visible over a wide area of Tees-side, these towers will form part of the new gasification plant

of gas production for ammonia at Billingham has meant the spending of several million pounds on the plant, but it does not displace the present method. Up to the stage where the gases are brought together in the Synthesis Plant the two methods will be operated side by side.

When completed it will be the most highly instrumented plant in the factory. It forms part of an expansion programme at Billingham, which needs a much greater output of ammonia.

The choice of plant lay between extension of the existing process based on coal or something new based on oil. Among the decisive factors in the choice were the possible fall in supplies of the better qualities of coking coal from the mines in the north-east serving Billingham and the relative capital and running costs of the two processes. It was mainly under the cost heading that the decision was made to go for oil gasification.

The standard process for producing the gases for ammonia manufacture uses coke, water and air. The new

process also needs water and air, but uses oil instead of coke.

One of the great virtues of the new process is that the gases are produced under pressure. Application of this principle cuts out some of the extensive compression operations in the ammonia process as now carried out.

### A Mechanical Heart

Can you make us a mechanical heart? This was the question put to the Apprentice Training School at Billingham by a group of Manchester doctors.

Although the apprentices only had ninety minutes to study the working of a half-finished model and to make quick sketches, they took the job on. It was hard team effort, but the finished job—a stainless steel double pump movement machine—has now been sent to the doctors.

They wanted a cheaper and simpler mechanical heart than the large complex one at present used in delicate heart operations. During these operations the human heart is isolated and the machine takes over, keeping the patient alive.

Billingham came into the picture by chance after a visit by Mr. J. V. Holt, Ammonia Works Section Engineer, to his brother-in-law, a surgeon. He saw there the partly completed prototype and suggested Billingham might help. Mr. J. A. L. Young, Division Personnel Director, and Mr. A. F. L. Bowley, then Division Education Officer, were consulted and the apprentices were given the go-ahead.

## FIBRES DIVISION

### 'Terylene' in Japan

I.C.I. has concluded an arrangement with Teikoku



Some of the first Japanese-style clothing to be made in 'Terylene' was on view recently in a Tokyo department store

Rayon Co. Ltd. and Toyo Rayon Co. Ltd. under which these companies will acquire patent rights for the manufacture of 'Terylene' in Japan. The arrangement will involve a substantial fixed payment and a continuing royalty on sales. The Japanese companies will not have the right to export polyester filament yarn, staple fibre and film to the United Kingdom or to any other country in which relevant patents exist.

The Company has already licensed companies in France, Germany, Holland and Italy to manufacture 'Terylene.'

## GENERAL CHEMICALS DIVISION

### Mr. E. Wallace

Eben Wallace joined the United Alkali Co. in 1892, before most of us were born. He retired in 1946 and died recently in his eightieth year after a short illness. Those facts, striking in themselves, are the barest bones of the career of one of the most colourful personalities in the earlier days of I.C.I.

Mr. G. K. Hampshire writes:

In 1926 Eben Wallace was Export Sales Manager of the United Alkali Co. He moved to London and had a great deal to do with the commercial policy and organisation of selling in the early formative period of I.C.I. For many years he was commercial director of the Alkali and General Chemicals Divisions, a doubling of two arduous posts which only one with his ability of quick thinking and hard work could have tackled. From 1940, when most men of his age had retired, until 1946 he was personnel director of the General Chemicals Division, and was involved in the almost endless discussions and negotiations to find labour.

An example of his devotion and hard work is to be found in the war years. After a full day's work in the office he would nightly help his wife with her ever-mounting work for the Soldiers', Sailors' and Airmen's Families Association until the early hours of the morning, and then, once or twice a week, visit one of the Division's Merseyside works to encourage the night workers.

Slim, handsome, debonair, he always looked at least twenty years less than his age. He chose to hide his innate kindness under a bushel, and because of his anxiety to get on with the business in hand and his brusque manner not many people knew how solicitous he was for the welfare of those who worked for or with him. Nothing in this way was too much trouble for him. His advice, drawn from a long experience of human nature, was always available to those who would ask, and many younger men who moved over his head in the promotion ladder have indeed reason to be grateful to him in this respect.

Another charming figure is removed from the scene—one who taught many of us the meaning of *panache*—and we shall indeed miss his greeting of "Well, young feller-me-lad" and his parting wish of "God bless you, my boy!"



## IN BRIEF

**NEW LABORATORIES.** Explosives research laboratories are to be built at Belœil, Quebec, this summer by Canadian Industries Ltd. Announcing this, Mr. M. J. Watson, General Manager of the Explosives Division, said that the project would cost about \$600,000 and was expected to take a year to complete.

**LIGHTWEIGHT CHAMPION.** Eighteen-year-old David M'Gowan of Ardeer became lightweight champion of the British Sea Cadet Corps in the Royal Albert Hall, London, on 11th February.

**ACCIDENT RATE RECORD.** I.C.I.A.N.Z. accident rate in 1956 was the lowest ever—2.7 per 100,000 man-hours worked. Previous best was 3.6 in 1954. The Safety Fuse factory has worked nearly five years without a lost time accident.

**PUBLIC SPEAKING SUCCESS.** Miss Audrey Hutchinson, of Wilton Accounts Department, won the North Riding and County Durham division of the Labour Party's national youth public speaking contest. Her subject: "Some Aspects of Automation."

**SCOUT AT WESTMINSTER.** Mr. R. J. Bratton, an instrument artificer in the Dumfries factory of Nobel Division, represented the Dumfries County Commissioner at the Scout movement's national thanksgiving service in Westminster Abbey. He is Scoutmaster of the 36th Dumfriesshire Troop.

**MILLIONAIRES.** The Plasterboard Plant Process Section of Billingham's Casebourne Works has achieved one million working hours free from accident.

**COMMON MARKET CONFIDENCE.** Speaking at a Cassel Works long service dinner, Mr. D. H. Carter, Joint Managing Director of General Chemicals Division, said of the proposed European Common Market: "I am confident that we shall be able to hold our own against all other producers, including Germany, for most of the important things we manufacture. This common trade should enlarge our market rather than the reverse."

**PROGRESS IN PREVENTION.** During 1956 Nobel Division made more progress in accident prevention than in any other year since 1929, when the compilation of accident and injury statistics was started by I.C.I.

**'NITRO-CHALK' EXPANSION.** Expansion of the 'Nitro-Chalk' plant at the Heysham factory of Billingham Division is being considered. The Company is seeking permission of the regional planning authorities for the project.

## Prize for Murals

Mr. Frank Mitchell, 20-year-old Bain Works apprentice painter and signwriter, recently won first prize for a panel of murals which he entered in a competition organised by the Northern Region Painters and Decorators Joint Education Committee. Entries, which were received from all parts of northern England, were exhibited for a week in Gateshead Shipley Art Gallery.

The competition was open to all day and evening class students in the North Region apprenticed to the painting and decorating trade, and Frank was successful in the class reserved for murals suitable for interior decoration. In addition to his design the preparation, filling and final finish of the wood were taken into consideration by the judges.

## METALS DIVISION

### Price Cut for Wrought Titanium

Substantial reductions in the price of I.C.I.'s titanium and titanium alloy products were announced recently. While continuing to vary according to the form of wrought product and the grade or alloy of titanium used, prices generally will be 10% lower.

Two factors have contributed to this important development: the steadily expanding range of applications for titanium in the aircraft industry, coupled with increasing production efficiency; and the continuing decline in the price of I.C.I. raw titanium metal, which for the past year has been below that of equivalent American material. At 19s. 6d. per lb., I.C.I. raw titanium metal is selling at the lowest published price in the world.

A conference, with the subject "Titanium in the Aircraft Industry," was held by I.C.I. on 15th February in London. Representatives of more than sixty firms connected with the aircraft industry attended.

In the course of a talk he delivered to the conference, Dr. Maurice Cook, chairman of Metals Division, said that the price of I.C.I. titanium products might fall to half

what it is today by 1960. Speaking personally, he had no difficulty in visualising a world output of 100,000 tons in ten years' time, and it was conceivable that the price of fabricated forms of titanium might in time be about twice, on a weight basis, that of stainless steel.

Speaking of the problems that had been encountered in titanium technology, Dr. Cook said that their solution represented one of the most outstanding metallurgical achievements of this or any other century.

## THE REGIONS

### Billy, Dolly & Co.

"Seven saved from death cause a problem"—this was the dramatic headline to a story which appeared in the *Birmingham Mail*.

The seven were retired bakers' van horses, and they were saved by Mr. Arthur Hall (Birmingham Area Order and Distribution Dept.) and his wife Joyce. Mrs. Hall used



(Photo: Birmingham Post and Mail)

Mr. and Mrs. Hall with Billy, Dolly, Noddy and their dog

to work in a bakery and grew fond of the horses that drew the delivery vans. Even after leaving the bakery she made weekly visits to the stables, and as the horses grew older she began to hate the idea of them ending their days in the knacker's yard.

This is when the problem started. As each horse was retired, the Halls bought it. For a time they limited their adopted family to four. Then three horses were retired at

once, and the Halls were tempted. After a 750-mile chase in a hired car Mrs. Hall traced the horses to a knacker's yard, awaiting slaughter, and took them home.

"This time I am afraid we have bitten off more than we can chew," said Mr. Hall. "We are both very fond of horses and willing to sacrifice a little of our pleasure so that they can spend the rest of their lives peacefully. But at the moment the expense is getting out of hand."

The couple have already moved house twice to be nearer suitable grazing land, and to help towards costs they have given up holidays and gone without luxuries. "But I am certain of one thing," Mrs. Hall told the *Birmingham Mail*: "Billy, Dolly, Curly, Tony, Blue Boy, Rabbit and Noddy will not end up in the knacker's yard."

★ ★ ★

## OUR NEXT ISSUE

The kernel of Wilton Works, where I.C.I. has spent more than £65m., is the oil cracking plant run by Billingham Division. The crackers provide raw material for polythene, 'Terylene,' 'Perspex,' paints, and many other things. Two of these crackers are already functioning and the erection of a third has been authorised. What happens when oil is "cracked"? What pressure is the oil subjected to, and in what manner? In fact, how is it all done? Our leading article will endeavour to answer these questions simply and clearly.

Our colour feature is about life in the Antarctic. The author is a young Australian from I.C.I.A.N.Z. who spent nearly a year on Macquarie Island with the Australian National Antarctic Research Expedition. His colour photographs include a particularly fine one of a young elephant seal.

Lastly, a piece about Sweden and the Scandinavian way of life. It is written by Alan Allsopp, formerly of Metals Division.



A view of the new titanium rolling mill which is now being built at Waunarlwydd, South Wales

## THE WAY AHEAD (continued from page 113)

skilled craftsman. This in my own view just is not sense: it is nothing but a survival of Victorian practice.

But having stated this problem is not to solve it. It must take years, I think, to make these changes at all widely, but as machines do more of the manual work for us and intelligent observation replaces physical effort, and where avenues of promotion for intelligent operators are

more apparent, then the difficulties—and they are considerable—will begin to disappear. In the next twenty-five years, if the world can avoid the stupidity and misery of another great war, I believe and hope that we will have come a long way down this road towards an industrial society without artificial barriers and subdivisions, and then indeed we will have a New Industrial Community.



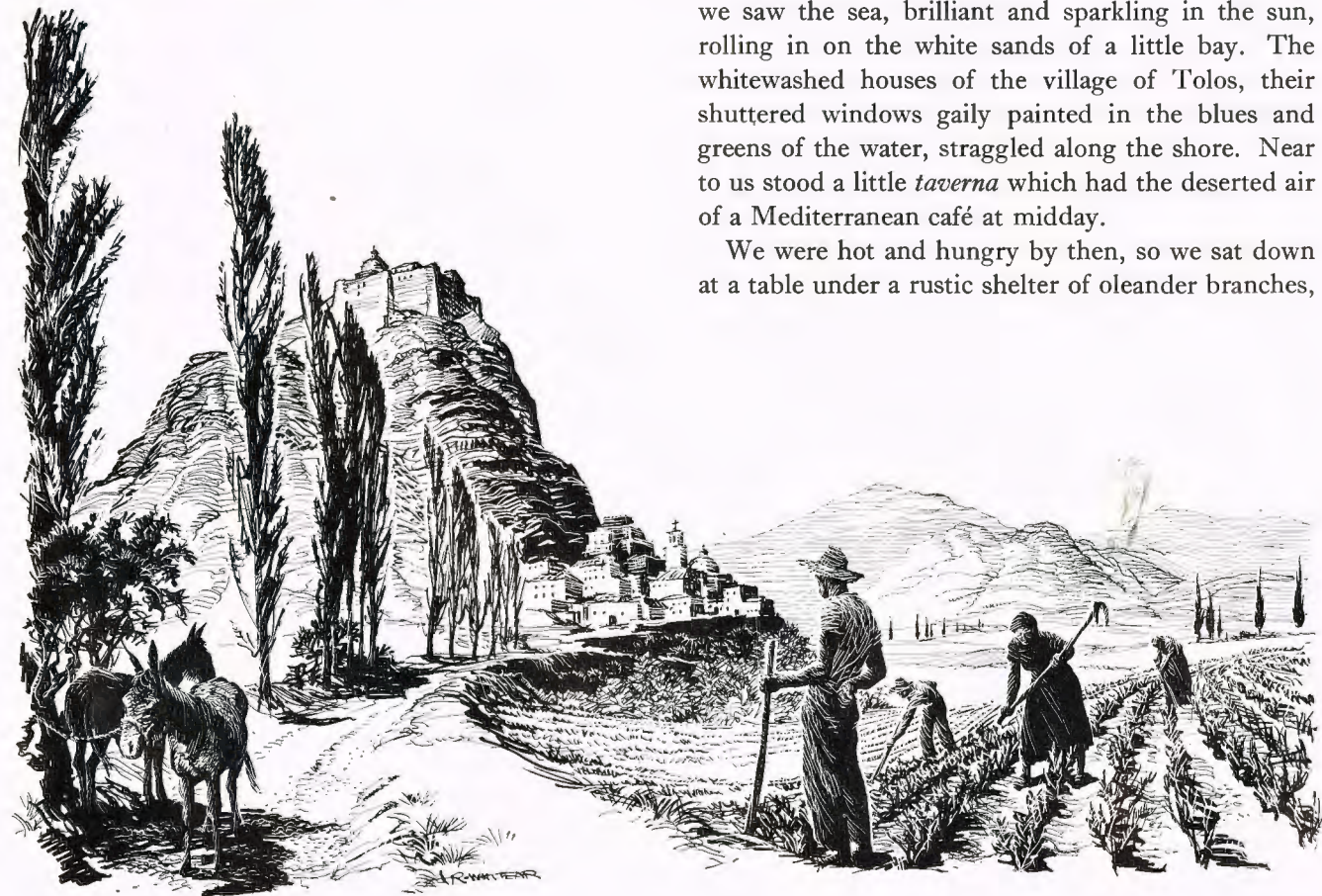
# A Bathe at Tolos

By W. C. McDowall

Illustrated by Bert Whitear

OUR knowledge of Greek could only be described as sporting. "Tolos?" we said enquiringly. "Tolos," said the conductor in vigorous affirmation, so we climbed into the bus and waited.

It is not dull waiting in buses in Greece, for there are always the driver's decorations above the wind-screen to look at—pictures of racing cars, and once a shrine depicting St. George, with a crimson heart which lit up when the engine started. This time we had photographs of family groups and a vase of artificial flowers. A few more passengers climbed leisurely in, and presently the conductor started the engine (a task which appears to be among the regular duties of Greek bus conductors) and we started off.

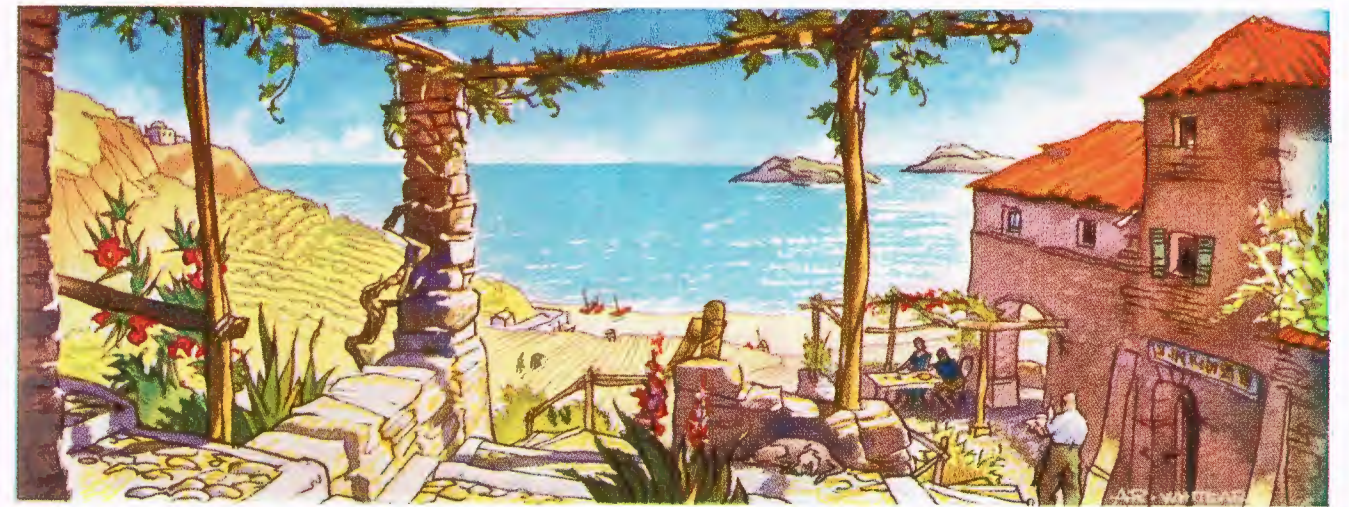


*We drove along dusty roads which wound through olive groves and vineyards*

We drove along dusty roads which wound through olive groves and vineyards. The country was hilly and stony and where uncultivated was covered with scrub and short yellowing grass—an arid land. In the fields the women, dressed all in black with covered heads, worked side by side with the men, who wore wide-brimmed straw hats, gaily coloured shirts and slacks. In the shade of the trees the donkeys which had brought them to work were resting in the growing heat of the day. Presently the conductor stopped the bus and repeated several times "Tolos" and our fellow passengers waved to us as we got off.

We walked along a dusty stony track between the olive trees in shimmering heat and then quite suddenly we saw the sea, brilliant and sparkling in the sun, rolling in on the white sands of a little bay. The whitewashed houses of the village of Tolos, their shuttered windows gaily painted in the blues and greens of the water, straggled along the shore. Near to us stood a little *taverna* which had the deserted air of a Mediterranean café at midday.

We were hot and hungry by then, so we sat down at a table under a rustic shelter of oleander branches,



*... a little "taverna" which had the deserted air of a Mediterranean café at midday*

facing the sea. We waited for a time, and when no one appeared I knocked on the door of the *taverna*. As there was no response I entered the dim and unpromising interior and called.

Presently I heard rope-soled sandals coming down the stairs. The proprietor appeared, and there followed the usual pantomime of Greek words and international gestures; having established, as I hoped, the fact that we wanted to eat and drink, I went back to the table and waited.

The *taverna* in the off season was not impressive, nor was mine host; but it was indeed a memorable meal which was soon set down before us. First, a glass of *ouzo*, the Greek apéritif, clear until water is added, when it clouds to a milky whiteness. Then fish appeared—delicious fresh fish fried in oil—and with it fresh lettuce and tomatoes dressed with a noble olive oil. Also, on the proprietor's recommendation, we had a bottle of wine from Samos which set off the fish to perfection. To follow this came coarse bread, goat's milk cheese, olives and delicious coffee.

We sat back replete in our chairs and admired the scene. The pink oleander blossoms made a perfect frame for the deep blues and greens of the sea and for the clear backcloth of the sky. In the misty distance the shape of an islet lay across the mouth of the bay. When we had taken our rest I complimented the proprietor on the meal, which altogether had cost us the equivalent of 11s. Then we walked slowly away from the village along a seashore deserted in the heat of the early afternoon. We changed into bathing costumes and ran down into the sea.

The water was cool and so clear that we could see

every pebble and shell on the seabed. We lay luxuriously in the water, then sunbathed on the shore. It was a perfect afternoon, lying there gazing up at the cloudless sky or over the sparkling sea, absorbing the sun and the heady air in unruffled peace and contentment. In the late afternoon we realised reluctantly that it was time to go. I dressed again in my old blue shirt, khaki shorts and gym shoes and went and sat in the shade of an olive grove by the roadside.

A small car came along the road, bearing a G.B. number plate. It stopped opposite me, and I saw four very British-looking tourists. They beckoned me over and after a short consultation ("You do it—no, go on, you know more than I do") one of them addressed me in halting Greek. It was a situation too tempting to resist, so I let him say his piece and then replied "If you are looking for Nauplia it is straight on along this road." All four occupants stared at me with mingled amazement and dislike, and then the driver hurriedly put in his clutch and left me standing in a cloud of dust and petrol fumes.

At length our antiquated bus appeared, rattling along the dusty road. They must have been looking for us, for as we climbed aboard we sensed a feeling of relief and everyone from the driver backwards greeted us with friendly nods and grins.

We came back to Nauplia in the cool of the evening, and as we alighted in the town square and walked slowly past the harbour filled with brightly painted fishing boats we agreed that it had been one of the happiest days of our holiday. And looking back on it now on a cold wintry day in Scotland we see no reason for changing that opinion.





*Bellagio, Lake Como*

*Photo by C. F. Clark*